

*de Schweinitz (G. E.)*

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TREATMENT OF CORNEAL ULCERS

BY THE  
  
ACTUAL CAUTERY.

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OPHTHALMIC SURGEON TO THE PHILADELPHIA AND CHILDREN'S HOSPITALS;  
OPHTHALMOLOGIST TO THE INFIRMARY FOR NERVOUS DISEASES.



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## THE TREATMENT OF CORNEAL ULCERS BY THE ACTUAL CAUTERY.

By G. E. DE SCHWEINITZ, M.D.,

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[Read February 11, 1891.]

As long ago as 1873, Martinache, of San Francisco,<sup>1</sup> recommended the application of the actual cautery for the treatment of hypopyon keratitis, and about the same time Samelsohn<sup>2</sup> advocated the galvano-cautery in affections of the lachrymal apparatus, conjunctiva, and ciliary border, a method which, before that time, in the hands of Mid-deldorpf, Bruns, Althaus, Groh, and other surgeons, had proved its value in a variety of types of special practice. Actual cauterization of the cornea, later received the earnest recommendation of Gayet, Grandmont, Martin, and Fuchs, but at first did not meet with universal approval. Subsequently the results published by Nieden, Schweigger, Knapp, and Gruening, placed the method upon so secure a basis that the actual cautery has become a well-nigh indispensable instrument in the management of certain types of ulcerative keratitis, and is a surgical procedure constantly employed by every practical ophthalmic surgeon. A certain amount of difference of opinion exists as to the character of cases to which the heated point of either a galvano- or thermo-cautery should be applied, although there is practical unanimity among all who have had any experience, that the actual cautery is the best radical destroyer of the sloughing tissues found in ulcers of mycotic origin typified by the serpentic ulcer of the cornea; or, in the language of Dr. Gruening: "In the incipient stage of *ulcus corneæ serpens*, characterized by the superficial arc of propagation, the actual cautery fulfils all the requirements of a classic procedure, acting *cito, tute et jucunde*." In the hands of others the use of the

<sup>1</sup> Pacific Medical and Surgical Journal, 1873.

<sup>2</sup> Archives of Ophthalmology and Otology, vol. iii., Part 2, p. 124.

instrument has not been limited strictly to serpentic ulcers, but also, as in Nieden's observations on more than one hundred cases, in addition to serpent and rodent ulcers, to scrofulous abscess both marginal and central, vesicular keratitis, with a patch of infiltration at its apex, parenchymatous corneal abscesses occurring in trachoma, and even examples of xerosis of the cornea. Enough has been said to emphasize what is well known, that the method is among the most suitable of those employed to check the spread of local infection in sloughing ulcers, and it remains to add to the numerous reports upon this subject the few cases that I have treated with my own hand, about thirty in number. These include:

1. Small central ulcers in children of bad nutrition, which either through neglect or imperfect treatment have tended to form an abscess.

2. Shallow central ulcers in scrofulous patients, the ulcer having a slightly turbid base, very chronic in its course, and declining to heal under ordinary remedies; in all of the cases of this character there were the appearances of former granular lids, and in one active trachoma.

3. Phlyctenular ulcers, beginning in the form of small pustules at the corneal border, speedily ulcerating and surrounding themselves by a yellow area of infiltration, and with a strong tendency to perforate.

4. Infecting or sloughing ulcers associated with pus in the anterior chamber, or, in other words, hypopyon keratitis.

5. Marginal ring ulcer, or that form which is sometimes seen in purulent ophthalmia, occurring just at the circumference of the cornea, often covered up by the chemotic conjunctiva, and very likely to perforate, because it is hidden by the swollen tissues and not observed.

6. Herpes of the cornea, one being an example of an ulcer associated with herpes zoster ophthalmicus, and the other true herpes of the cornea in which a vesicular eruption occurs, breaks down, and leaves an ulcer; that form which has been seen under the same circumstances as when herpes occurs around the lips and nose.

I will not give the clinical history of these cases, as it would simply burden the communication unnecessarily with detail, except to say that the actual cautery was applied only after other treatment had been used, either at my hands or at the hands of some one else. I have not a single bad result to record. In three of the cases perforation of the cornea took place, with evacuation of the aqueous humor, twice as an accident during the application of the cautery, and once when the ulcer had nearly perforated and Descemet's membrane had bulged forward, forming its floor, and I deliberately burned through the tissue. In

the cases of hypopyon keratitis perhaps it would have been wise, as Nieden has recommended, to have perforated the cornea with the thermo-cautery, but as they were the first ones in which I performed the operation I did not wish to do this; in the second place, the hypopyon was not of great extent, and in the third place, I wanted to see whether the application of the cautery to the surface of the cornea alone would produce absorption of the pus.

METHOD OF APPLICATION.—Various forms of cautery have been employed, the most suitable being a small Paquelin thermo-cautery, or the galvano-caustic loop, the latter in the form devised by Professor Sattler, of Erlangen, is, according to Nieden, especially satisfactory. My experience has been entirely with more crude instruments, but which have answered the purpose, either a delicate probe suitably made of platinum, according to the recommendation of Gruening, or if this is not at hand, an ordinary steel needle, about the size of a knitting-needle. According to the situation of the ulcer, and according to the condition of the iris, the eye is either atropinized or eserinizied, a few drops of cocaine are instilled to produce anæsthesia, and a Bunsen burner is placed adjacent to the head of the patient, the probe is heated red hot, transferred to the point of disease, all of the sloughing material gently but thoroughly cauterized, and without undue pressure. It is not necessary to separate the lids with a stop speculum; in fact, this is probably a disadvantage, putting some pressure upon the ball of the eye. They may be parted by the hands of the operator himself, or, if he is to be trusted, by those of an assistant. In restless young children, although not necessary, it is safer to induce general anæsthesia simply for the purpose of securing perfect quiet. After the application, the eye may be washed out with solution of boracic acid, a drop of atropine instilled, and a bandage applied. This latter procedure also is not required, but it has seemed to me to make the patient more comfortable. Quite commonly, on the next day the bulbar conjunctiva is considerably injected, the eye looking angry and red. If the cautery has been applied properly, the ulcer itself is cleaner and healthier, the surrounding cornea less nebulous, and if there has been pus in the anterior chamber this, in my very limited experience, has been absorbed, or nearly so. Usually, one application is sufficient, but it is well known this may be repeated on the third or fourth day, and, indeed, several times repeated, according to the indications, provided the original destruction of tissues has not been sufficient. I have never applied the cautery more than three times to the same ulcer.

SUBSEQUENT TREATMENT.—If the case has been successful, and it is not necessary to reapply the cautery, the treatment becomes simply that of an ordinary corneal ulcer, which has been converted from a sloughing process, or from a chronic process, or from a process which relapses, into a healthy ulcer, into an ulcer with the impulse of an active stimulation, or into an ulcer with the tendency to relapse removed.

THE QUESTION OF SCARS.—It has been urged against the employment of the actual cautery, that a much more dense scar or leucoma was likely to form than when the ulcer was treated in the ordinary way. This, in the experience of the best ophthalmic surgeons, is a mistake. In my limited series of cases it certainly has never occurred that the resulting scar was greater than would have occurred had the cautery not been used; and I am strongly convinced that in every instance the scar was smaller than would have been the case had I not employed this agent. Touching this point, the following quotation from Fuchs<sup>1</sup> is *apropos*: "On the cauterized spot an opacity always remains, but as one cauterizes only that spot which without this would meet with the ulcerous disintegration, the final opacification on account of this will not be greater than it would have been in the first place." As I have just said, in the belief of many, it will not be as great.

In one example of central corneal ulcer going on to the formation of an abscess, after two cauterizations, in the second one of which I perforated the cornea, and in which cure took place in less than two weeks, although the original disease had been running on for several months in the form of a series of relapses, the ultimate

vision was  $\frac{20}{L}$  in spite of the nearly central situation of the disease.

In the case of true herpes of the cornea, where a single application of a button cautery, very lightly applied, checked a process that began in September, and was active at the end of the following December, the result was only a faint diffuse haze over the centre of the pupillary space, which, by the correction of an astigmatism of a half diop-

tric, yielded a slightly clouded vision of  $\frac{20}{XX}$ . In a case of nearly central ulcer of the cornea with unhealthy margins, associated with phlyctenula around the margin, which had relapsed a number of times, in which the photophobia was very great, and the brow pain severe, and

<sup>1</sup> Lehrbuch der Augenheilkunde, p. 169.

in which good healing took place twenty days after the application, the resulting scar consists of a whitish band running diagonally across the pupil space, with a few old vessel channels traceable from it to the margin, and scattered through it several minute, white saturated spots, the vision is  $\frac{20}{c}$ , and one and one-half metre print can be read.

CONTRA-INDICATIONS.—In very extensive ulceration, involving a large area of the cornea, I would not use the actual cautery, certainly not until I had tried all other means, because, in order to make it effectual and to stop the sloughing process, the application would have to be so great as to lead to the possibility of an excessive reaction. It should be remembered, however, that in just such cases very good results have been obtained. I have had no personal experience. The actual cautery should not be applied to an ulcer which has already perforated, and to the margins of which the iris has become adherent. Some cases of this character are on record, in which a destructive inflammation, with subsequent loss of the eye, has been occasioned by the travelling back of the inflammation from the inflamed stump of the iris. The actual cautery does not seem to me to be indicated in those cases of hypopyon keratitis in which there is a large ulcer associated with a hypopyon that nearly fills the anterior chamber, and in which it can be demonstrated that the collection is exceedingly tenacious, having assumed the character of a slough. Here Saemisch's operation would seem to be the better; because, after its performance a delicate forceps can be introduced, and the offending material bodily removed, or it can be washed out, preferably with the admirable syringe devised by Lippincott, of Pittsburg. As Gruening aptly has said: "In these cases a combination of the two methods appears to be rational, for the actual cautery destroys the septic material of the cornea, and the Saemisch section removes the septic material from the anterior chamber." The actual cautery should not be used simply because there is a corneal ulcer. It is applicable especially to sloughing ulcers, to ulcers in which the spread of local infection is the dominant symptom, to ulcers which decline to heal under more moderate means, like the bichloride-of-mercury method, especially advocated by our fellow-member Dr. Jackson, the use of eserine, which has been ably insisted upon by Dr. Hansell, with whose conclusions I am in entire accord, or the use of milder cauterizations with solutions of nitrate of silver, or powdered iodoform, or scraping the base of the ulcer with a small curette. Touching the limitation of the suppurative process in sloughing ulcers, Mr. Brudenell Carter somewhat

enthusiastically says: "The most potent medicinal agent for the fulfilment of the first indication is eserine, which has been the means of saving numbers of eyes which without it must have perished."

Agreeing thoroughly with this author's estimate of the value of eserine, not only in sloughing ulcers, but in a host of other forms of corneal disease characterized by solutions in its continuity, we may say that in the event of the failure of this drug, and other well-recognized treatments, the actual cautery, in its power to limit suppurative processes, "has been the means of saving numbers of eyes," and with reasonably good vision, which without it might have perished.



